Advanced Resources International

Background and Technical Information:

Demonstration of Integrated Remote Sensing Analysis to Identify Oil Exploration Leads in the Williston Basin, Fort Berthold Indian Reservation, North Dakota

Advanced Resources International (ARI) - will collaborate with the Three Affiliated Tribes (Arikara, Mandan, and Hidatsa), and the Bureau of Indian Affairs to develop an integrated, non-invasive procedure to assess oil exploration potential in the Williston Basin, on the Fort Berthold Indian Reservation in western North Dakota.

Previous studies indicate a high potential for undiscovered oil and gas resources on the Reservation. Of particular interest are the Madison carbonate and Bakken shale plays, which contain an estimated 320 million barrels of recoverable oil. Project partners will amass a comprehensive set of data using remote satellite imagery from NASA, existing seismic data, and digital well logs to identify specific areas for resource development, and identify drilling sites.

Contact Information:

Selectee: ADVANCED RESOURCES INTERNATIONAL

Business Contact: Mr. Scott Reeves

Business Office Address: 9801 Westheimer
Suite 805
Houston, TX 77042

Phone Number: (713) 780-0815
Fax Number: (713) 780-0815
E-mail: sreeves@adv-res-hou.com

Financial Information:

Length of Contract (months): 24
Government Share: $297,584
Total value of contract: $635,790

DOE Funding Breakdown:
Funds: Phase and/or FY 2002 $234,721
Funds: Phase and/or FY 2003 $ 62,864

Congressional District: 07 District County: Harris

Golder Associates Inc.

Background and Technical Information:

Multicomponent Seismic Analysis and Calibration to Improve Recovery from Algal Mounds: Application to the Roadrunner/Towaoc Area of the Paradox Basin, Ute Mountain Ute Reservation, Colorado

A partnership of: Golder Associates Inc., Ute Mountain Ute Tribe, Red Willow Production Co., Legacy Energy Corp. and WesternGeco

The ability to optimize development of oil reservoirs is challenging where porosity and permeability vary in unpredictable ways due to highly distinctive geology variations. An important example of this is in the algal mounds of the Lower and Upper Ismay reservoirs of the Paradox Basin in Utah and Colorado. It is nearly impossible to develop a predictive model to identify regions of better reservoir development. Enhanced recovery processes, therefore, must be selected and designed based upon data that can quantitatively or qualitatively distinguish regions of good or bad reservoir permeability and porosity.

Recent advances in data collection for models using vibration or waves (seismic acquisition) and processing advances offer new ways to see smaller features with more confidence, and to characterize the internal structure of reservoirs such as algal mounds. However, these methods have not been tested. This project will acquire cutting edge, three-dimensional, three-component (3D3C) seismic data and utilize recently-developed processing algorithms to extract attributes that relate to variations in reservoir permeability and porosity.

In order to apply advanced seismic methods a detailed reservoir study is needed to calibrate the seismic data. This will be done by developing a petrological and geological characterization of the mounds from well data; acquiring and processing the 3D3C data; and comparing the two using advanced pattern recognition tools such as neural nets. In addition, should the correlation prove successful, the resulting data will be evaluated from the perspective of selecting alternative enhanced recovery processes, and their possible implementation.

The work will be carried out on the Roadrunner/Towaoc Fields of the Ute Mountain Ute Tribe, located in the southwestern corner of Colorado. The successful completion of this project will not only benefit the Ute Mountain Ute Tribe through increased oil revenues, but also have many related benefits. Such benefits include, enhancing the technical capabilities of the Red Willow Production Company, a teaming partner in this project and a wholly owned entity of the Southern Ute Tribe. Fields of this type that exist in nearby Navajo tribal lands and other domestic oil producers in the Paradox Basin would be able to apply this technology to increase recovery from algal mound fields. These existing algal mound fields contain hundreds of millions of barrels of oil still remain to be discovered or recovered. Although this project is focused on development of existing resources, the calibration established between the reservoir properties and the 3D3C seismic data can also enhance exploration success for these algal mounds.

Technical Point of Contact: Dr. Paul La Pointe, Golder Associates Inc. 18300 NE Union Hill Road Redmond, WA 98052 (425) 883-0777 (ph) (425) 882-5498 (fax)
plapointe@golder.com

Contact Information:

Selectee:	GOLDER ASSOCIATES, INC.
Business Contact:	Mr. Michael Brown
Business Office Address:	18300 NE Union Hill Road Suite 200 Redmond, WA 98052
Phone Number:	(425) 833-0777 x2148
Fax Number:	(425) 882-5498
E-mail:	mbrown@golder.com

Financial Information:

Length of Contract (months):	24
Government Share:	$ 736,696.48
Total value of contract:	$ 942,396.48

DOE Funding Breakdown:

Funds:	FY 2002 $ 597,748.67
Funds:	FY 2003 $ 138,947.81

Grand Resources Inc.

Background and Technical Information:

Enhanced Oil Recovery by Horizontal Waterflooding

Grand Resources Inc. (Grand) and Dauben International Energy Consultants proposes to evaluate horizontal water-flooding technology in the Bartlesville formation in the Woolaroc Field located in Osage County, Oklahoma. This project, entitled "Enhanced Oil Recovery by Horizontal Water-flooding" could validate the ability of horizontal waterflooding to recover large quantities of additional oil from the Bartlesville reservoir, which is considered to be in a mature stage of depletion. The Osage Tribal Council has expressed its support of this project as indicated in Resolution No. 30-1335 dated March 20, 2002.

The proposed pilot well in the Woolaroc Field will be drilled in a portion of the field that has never been waterflooded and will consist of a center horizontal injection well and two offsetting and parallel horizontal producing wells. This pattern will permit the injection of large amounts of water below the fracture-parting pressure. Grand plans to drill the horizontal laterals with air to minimize formation damage that could occur. Simulation studies indicate that the proposed horizontal well pattern results in greatly increased oil producing rates and enhanced total recovery when compared to conventional waterflooding using vertical wells. The resulting economics can be quite attractive.

While horizontal water-flooding has been successfully demonstrated in various deeper formations, the application of horizontal injection AND producing wells in shallow, low permeability reservoirs is an area of opportunity for horizontal well technology. The Bartlesville formation, which contains millions of barrels of potentially recoverable oil, is considered to be an ideal candidate for horizontal waterflooding.

The Bartlesville formation existing across Osage County is a shallow, naturally fractured reservoir with low permeability. Conventional waterfloods using vertical wells in this formation are often unsuccessful because water cannot be injected under the reservoir parting pressure at a high enough rate to facilitate economic operations. Poor oil recovery often occurs if the operator exceeds the fracture-parting pressure of the reservoir. A substantial amount of additional oil can be recovered by using a technology that would allow large volumes of water to be injected below the reservoir parting pressure economically.

Dr. Dwight Dauben, of Dauben International Energy Consultants, will provide reservoir simulation and water-flood design support for the project. He brings over 30 years of experience with Amoco and major consulting organizations in reservoir engineering applications and improved oil recovery methods. Marvin Robinowitz is the President of Grand Resources and will be the project manager for the pilot study. Mr. Robinowitz has been operating primary production and waterfloods in Osage County since 1973. He has experienced and understands the limitations of waterflooding the Bartlesville formation using conventional vertical well patterns.

Through the project, Grand will utilize the Petroleum Technology Transfer Council to inform interested regional operators. For additional information, Marvin Robinowitz can be contacted at (918) 492-2366.

Contact Information:

Selectee:	GRAND RESOURCES, INC.
Business Contact:	Mr. Scott Robinowitz
Business Office Address:	2448 East 81st Street Suite 4040 Tulsa, OK 74137
Phone Number:	(918) 492-2366
Fax Number:	(918) 492-9742
E-mail:	scott@grandoil.com

Financial Information:

Length of Contract (months):	24
Government Share:	$ 399,640
Total value of contract:	$ 877,393

DOE Funding Breakdown:

Funds:	FY 2002 $370,740
Funds:	FY 2003 $ 28,900

Congressional District: 01 District County: Osage

Jicarilla Apache Nation

Background and Technical Information:

JAECO Oil Processing Program

Oil and gas production has been a significant source of revenue to the Jicarilla Apache Nation (Nation) since production began in 1955. Development of oil and gas reserves became a critical factor in the Nation's continued economic development.

The Jicarilla Apache Nation has teamed up with the Jicarilla Energy Company (JAECO) to develop a feasibility study to produce a process design for a petroleum refinery, which will maximize the value of crude oils produced on tribal lands. This study will demonstrate the feasibility of constructing a oil processing facility on the Reservation, which will yield innovative strategies to increase the feasibility of oil processing facilities and to use these facilities as a cornerstone for additional economic development.

In 1976 the Nation negotiated a contract which eventually resulted in the Nation owing 100% of several wells. Interest was developed in creating a Jicarilla owned oil-company and as a result the Jicarilla Energy Company was formed. Since then the Tribal oil company, now iicarilla Apache Energy Corporation or JAECO, has continued to operate a small number of wells and has built and operated a small gasoline and diesel regeneration plant in Dulce, New Mexico.

The Jicarilla Apache Reservation is geographically situated in the northeast quarter of the resource-rich San Juan Basin, a northwest trending structural basin containing large amounts of gas, oil, coal, uranium, and geothermal reserves. Oil and gas reservoirs have been developed in the southern and northern portions of the Reservation. The southern portion has been extensively developed and is considered a mature area. The northern portion has seen much less development and has several large areas where no wells have been drilled. Current development and a new Minerals Development Agreement covering acreage in the northern portion of the Reservation mark the beginning of a new wave or more extensive reserve development of the Nation.

The Jicarilla Apache Nation, located in north central New Mexico, borders Colorado to the north and extends 63 miles to the south. The 879,917-acre Reservation lies in both Rio Arriba and Sandoval counties.

Contact Information:

Selectee:	JICARILLA APACHE NATION
Business Contact:	Mr. Jesse Evans
Business Office Address:	P.O. Box 710, Dulce, NM 87528
Phone Number:	(505) 759-3224
Fax Number:	(505) 759-3885
E-mail:	JEVANS232000\@yahoo.com

Financial Information:

Length of Contract (months):	24
Government Share:	$343,160
Total value of contract:	$428,950

DOE Funding Breakdown:

Funds:	FY 2002 $171,580
Funds:	FY 2003 $171,580

Congressional District: 03 District County: Rio Arriba